

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 30 MAR 2005

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| Applicant's or agent's file reference PCT212/365AK | FOR FURTHER ACTION See Form PCT/IPEA/416 | | | | | | | | | | | | | | | | | | | | | | | | | |
| International application No. PCT/FI 2004/050110 | International filing date (day/month/year) 01.07.2004 | Priority date (day/month/year) 07.07.2003 | | | | | | | | | | | | | | | | | | | | | | | | |
| International Patent Classification (IPC) or national classification and IPC D21G 9/00, D21F 7/00, B65H 20/14 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Applicant METSO PAPER INC. et al | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>3</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>3</u> sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <table><tr><td><input checked="" type="checkbox"/></td><td>Box No. I</td><td>Basis of the report</td></tr><tr><td><input type="checkbox"/></td><td>Box No. II</td><td>Priority</td></tr><tr><td><input type="checkbox"/></td><td>Box No. III</td><td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td></tr><tr><td><input type="checkbox"/></td><td>Box No. IV</td><td>Lack of unity of invention</td></tr><tr><td><input checked="" type="checkbox"/></td><td>Box No. V</td><td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VI</td><td>Certain documents cited</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VII</td><td>Certain defects in the international application</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VIII</td><td>Certain observations on the international application</td></tr></table> | | | <input checked="" type="checkbox"/> | Box No. I | Basis of the report | <input type="checkbox"/> | Box No. II | Priority | <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | <input type="checkbox"/> | Box No. IV | Lack of unity of invention | <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | <input type="checkbox"/> | Box No. VI | Certain documents cited | <input type="checkbox"/> | Box No. VII | Certain defects in the international application | <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. II | Priority | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention | | | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VI | Certain documents cited | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of submission of the demand 24.01.2005 | Date of completion of this report 17.03.2005 | | | | | | | | | | | | | | | | | | | | | | | | | |
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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI 2004/050110

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(b))
☐ publication of the international application (under Rule 12.4)
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ the international application as originally filed/furnished

☒ the description:

pages 1 - 12 as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☒ the claims:

pages _____ as originally filed/furnished

pages* _____ as amended (together with any statement) under Article 19

pages* 14 - 16 received by this Authority on 24.01.2005

pages* _____ received by this Authority on _____

☒ the drawings:

pages 1 - 4 as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (*specify*): _____

☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (*specify*): _____

☐ any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI 2004/050110

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|--------|-------------|-----|
| Novelty (N) | Claims | <u>1-15</u> | YES |
| | Claims | | NO |
| Inventive step (IS) | Claims | <u>1-15</u> | YES |
| | Claims | | NO |
| Industrial applicability (IA) | Claims | <u>1-15</u> | YES |
| | Claims | | NO |

2. Citations and explanations (Rule 70.7)

Documents cited in the International Search Report:

D1: US 5738760 A

D2: US 4881327 A

D3: US 5370289 A

The cited documents represent the general state of the art.
The invention defined in claims 1-15 is not disclosed by any of these documents.

The cited prior art does not give any indication that would lead a person skilled in the art to the claimed equipment for leading a web tail with a flow of air in a paper machine. Therefore, the claimed invention is not obvious to a person skilled in the art.

Accordingly, the invention defined in claims 1-15 is novel and is considered to involve an inventive step. The invention is industrially applicable.

CLAIMS

1. Equipment for leading a web threading tail in a paper machine, which equipment includes at least two sequential
5 surfaces (11) in the direction of travel of the web threading tail (10), between which a nozzle (12) is arranged in order to form a directed air blast and thus to transport the web threading tail (10), being lead onto the first surface (11) in the direction of travel of the web threading tail (10), onwards
10 to the following surface (11), characterized in that the equipment includes at least two cellular elements (13), arranged in a staggered manner relative to each other, so that the nozzle (12) is the gap (14) formed between the elements (13) and the surface (11) is the wall on the side of the said
15 gap (14) of the walls delimited by the element (13), and the elements (13) are arranged as an excess pressure chamber for distributing air inside the elements (13) from one element (13) to another.

20 2. Equipment according to Claim 1, characterized in that the sequential elements (13) are fitted detachably to each other using connector devices (15), for setting the size and shape of the gap (14) as desired, by altering the mutual position and alignment of the elements.

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3. Equipment according to Claim 1 or 2, characterized in that the element (13) is a duct of sheet metal with a cross-section of an essentially rectangular shape, which is arranged to be closed at at least one end with an end piece (17), and
30 into which the air is arranged to be led.

4. Equipment according to any of Claims 1 - 3, characterized in that the length of the element (13) is 50 - 400 mm, preferably 100 - 300 mm.

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5. Equipment according to any of Claims 1 - 4, characterized in that, after the gap (14) in the direction of travel of the web threading tail (20), there is a lubrication zone (19) in the wall forming the surface (11), for leading air from
5 inside the element (13) between the web threading tail (10) and the surface (11).
6. Equipment according to any of Claims 1 - 5, characterized in that, before the nozzle (12) in the direction of travel
10 of the web threading tail (10), there is an exhaust zone (20) arranged in the surface (11) for leading the air away from the element (13) between the web threading tail (10) and the surface (11).
- 15 7. Equipment according to Claims 5 or 6, characterized in that the zones (19, 20) formed of gaps or holes extend over the entire width of the element (13) and that their length is 5 - 30 %, preferably 10 - 20 % of the length of the element (13).
- 20 8. Equipment according to any of Claims 1 - 7, characterized in that each element (13) is essentially identical and that in at least one wall of the element (13) there is an opening (22), which is arranged to be filled with a connection (23) for leading air into the element (13), or with a support
25 bracket (24) for supporting the equipment from the paper machine, or with a plug (25), which closes the opening (22).
9. Equipment according to any of Claims 1 - 8, characterized in that height of the gap (14) is 0,5 - 10 mm, preferably
30 1 - 4,5 mm, in which case the velocity of the air discharging from the gap (14) from inside the element (13) at an excess pressure of 1 - 30 kPa will be restricted to the range 40 - 200 m/s.

10. Equipment according to any of Claims 1 - 9, characterized in that the equipment includes a fan (26) for feeding air into the element (13).
- 5 11. Equipment according to Claim 10, characterized in that the said fan (26) is preferably the fan of some other device in the vicinity of the equipment, which other device is switched during web threading.
- 10 12. Equipment according to Claim 6, characterized in that an exhaust zone (20) is arranged before each nozzle (12).
13. Equipment according to Claim 6 or 12, characterized in that an exhaust channel (21), which is connected to the exhaust
15 zone (20), is arranged in the element (13).
14. Equipment according to any of Claims 1 - 13, characterized in that the nozzle (12) is a gap nozzle (14), which is formed from a blast opening (27) arranged in the base material
20 of the surface (11) of sheet material.
15. Equipment according to Claim 14, characterized in that the exhaust zone (20) is formed of one or several exhaust openings (28), the structure of which is arranged to be similar
25 to the structure of the blast opening (27), but the other way round.